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Segal

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[54] **DUAL-FUNCTION LOOSELEAF BINDER SHEETS**

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[51] **Int. Cl.**[3] **B42F 3/00**

[52] **U.S. Cl.** ..... **402/79**; 281/2; 281/5; 402/80 R; 402/501

[58] **Field of Search** ..... 281/2, 5, 21·A, 23, 281/25 A, 38; 283/62, 66 R; 402/19, 79, 80 R, 500, 501

[56] **References Cited**

U.S. PATENT DOCUMENTS

915,789	3/1909	McComb	402/79
1,687,859	10/1928	Fontaine	402/500
2,831,538	4/1958	Lishman	402/80 R X
3,315,683	4/1967	Rodriguez et al.	402/500

FOREIGN PATENT DOCUMENTS

2408108	8/1975	Fed. Rep. of Germany	402/500

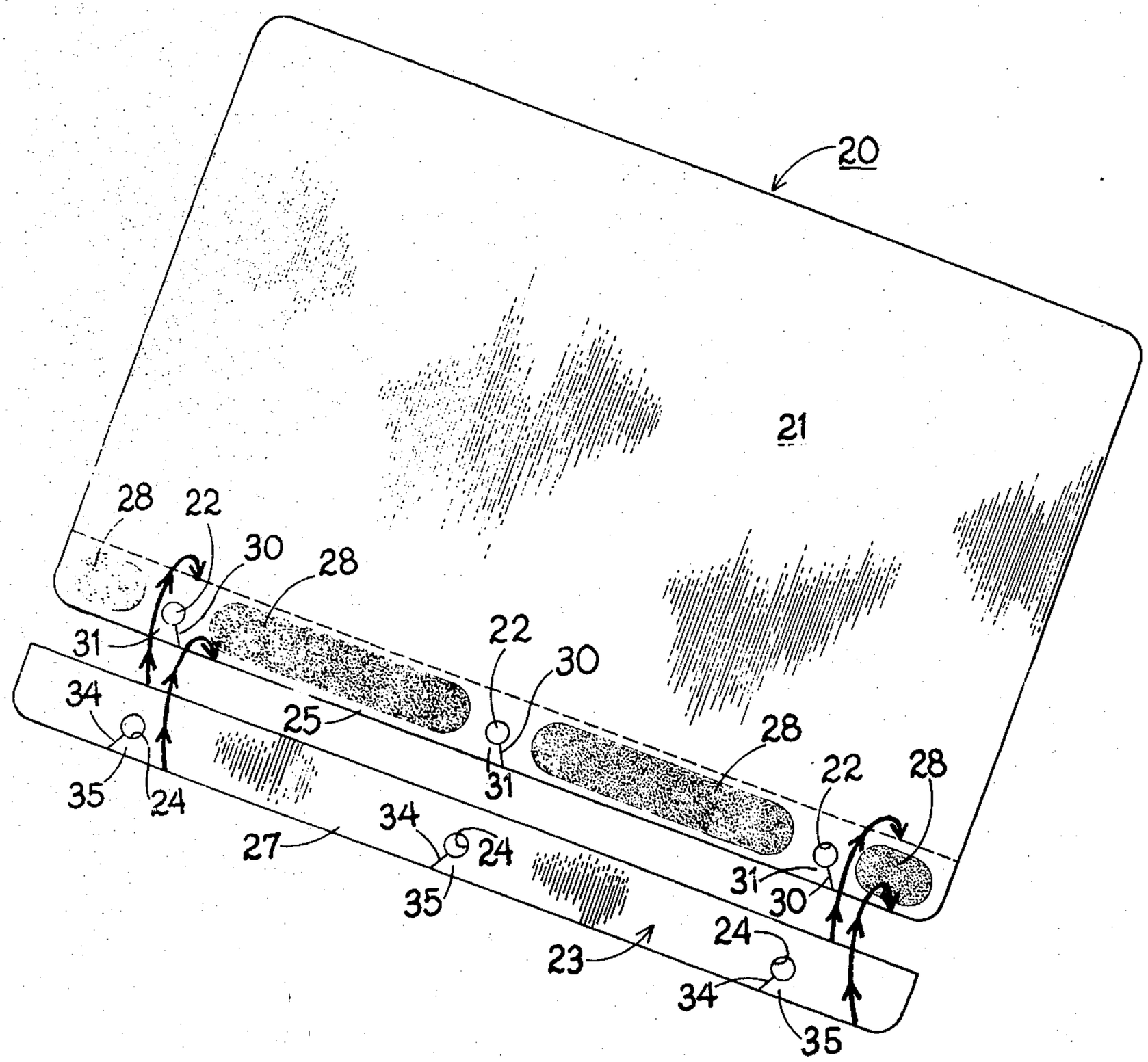
Primary Examiner—Paul A. Bell

Attorney, Agent, or Firm—Mattern, Ware, Stoltz & Fressola

[57] **ABSTRACT**

This invention relates to looseleaf binder sheets, and more particularly to looseleaf binder sheets having the capability of being both securely retained in the binder from removal in response to forces acting in one direction, while also being easily removed against the binder when withdrawn in an alternate direction.

8 Claims, 11 Drawing Figures



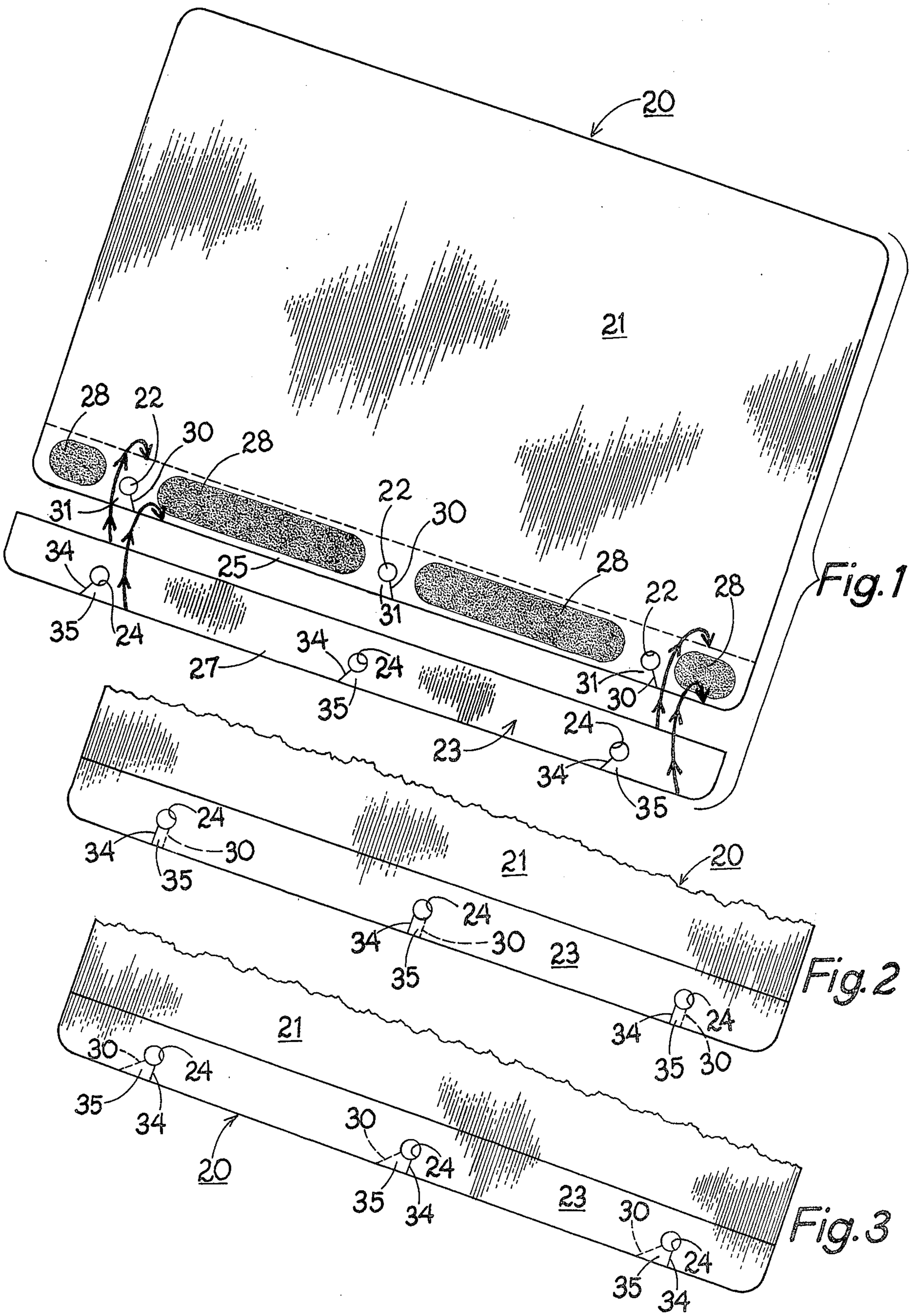


Fig. 1

Fig. 2

Fig. 3

Fig. 4

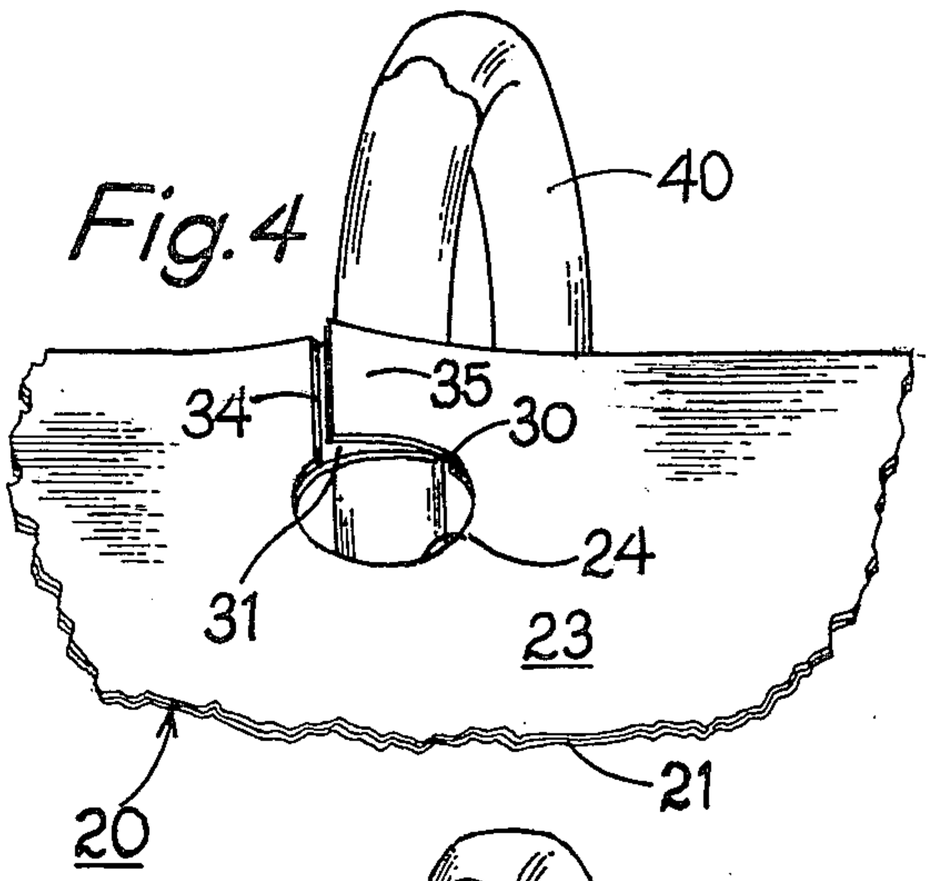


Fig. 5

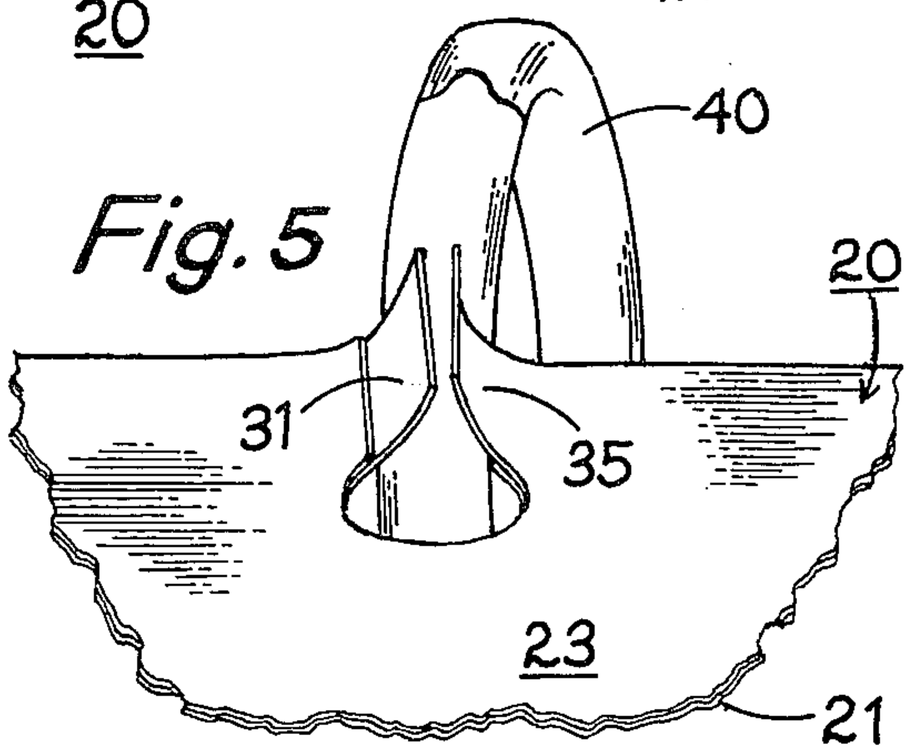


Fig. 6

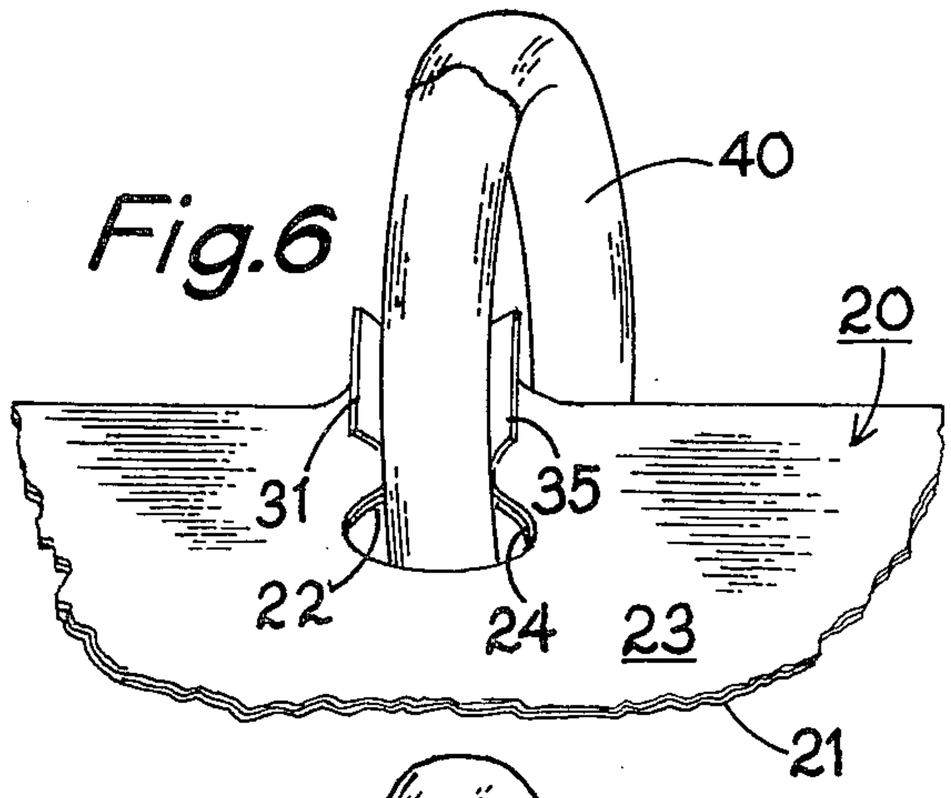


Fig. 7

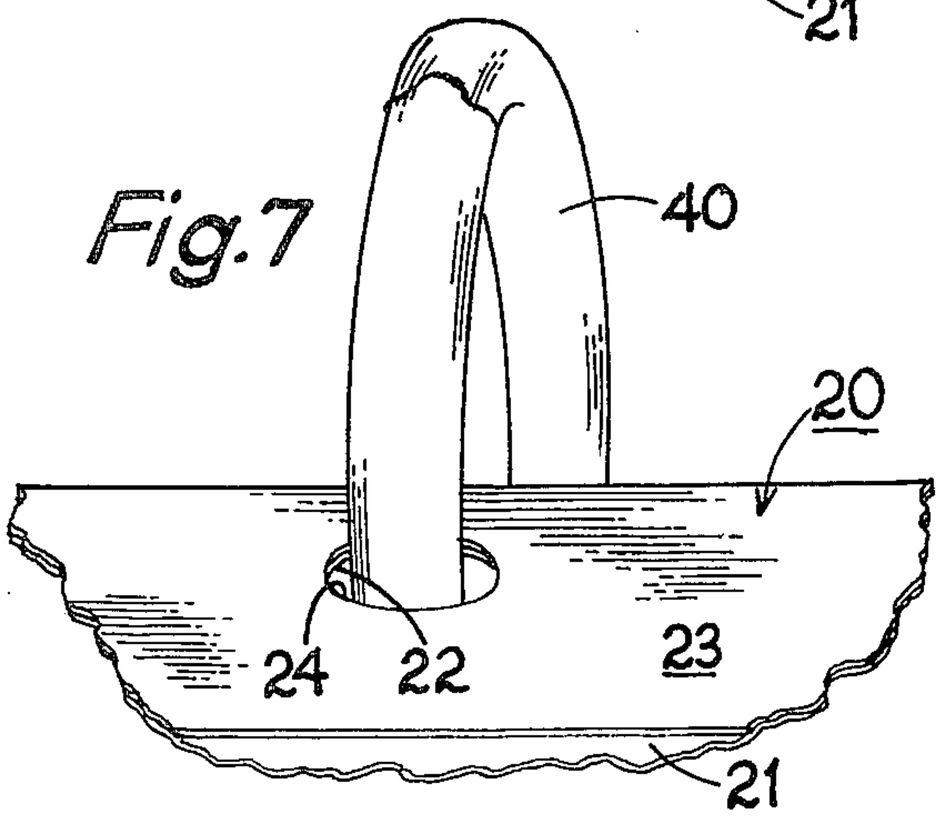


Fig. 8

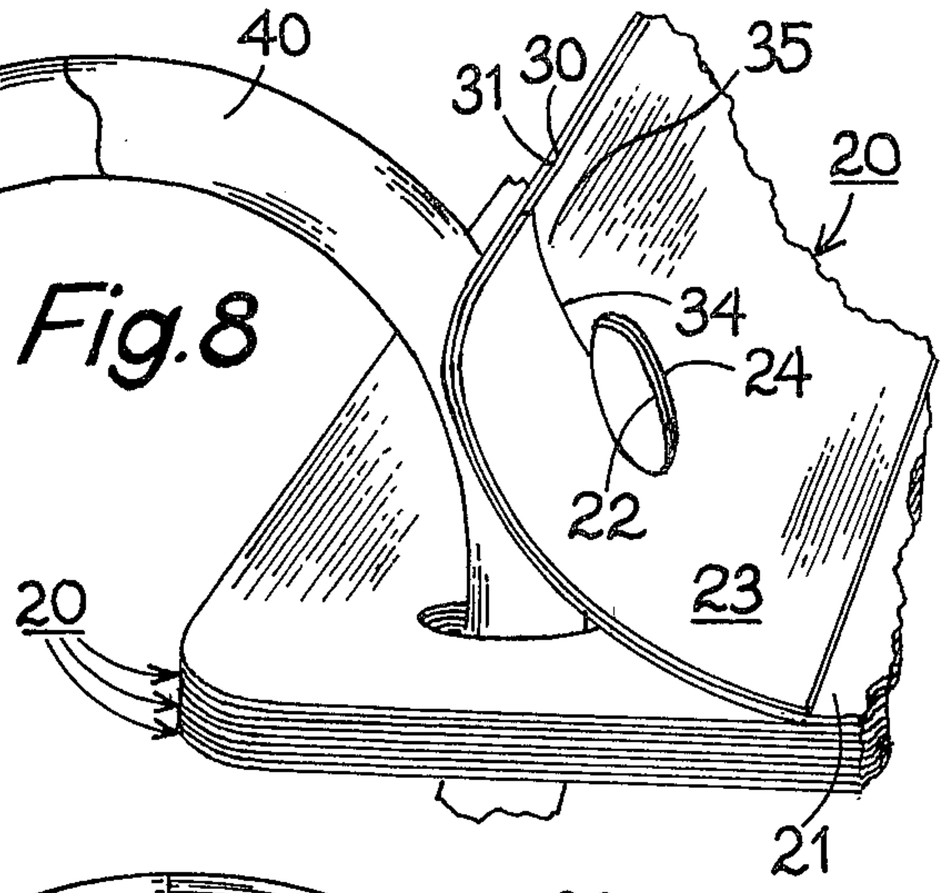


Fig. 9

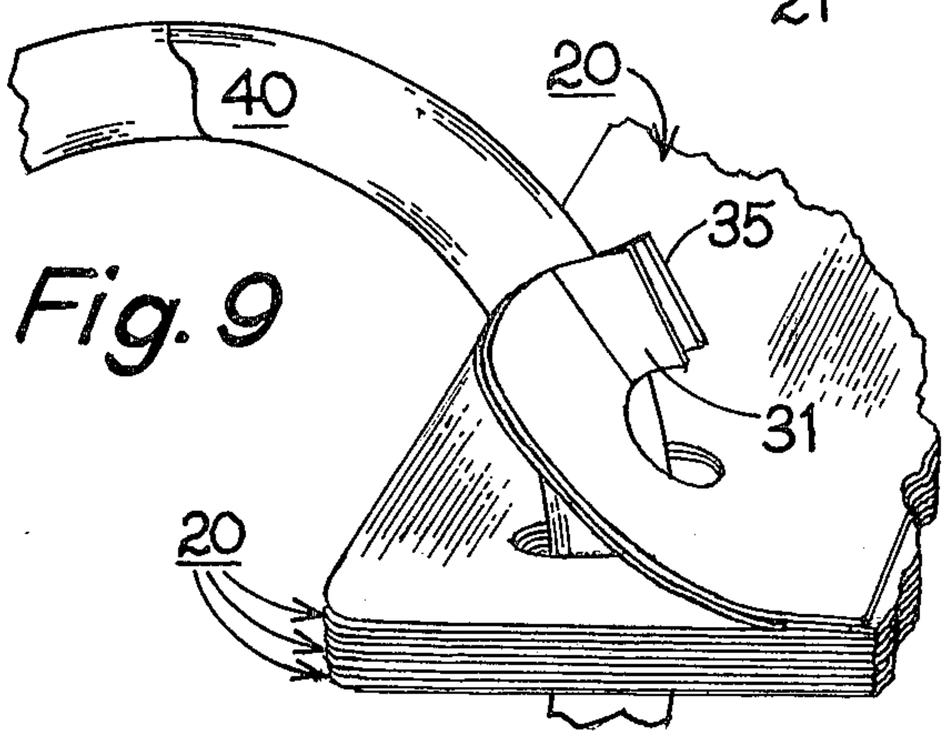


Fig. 10

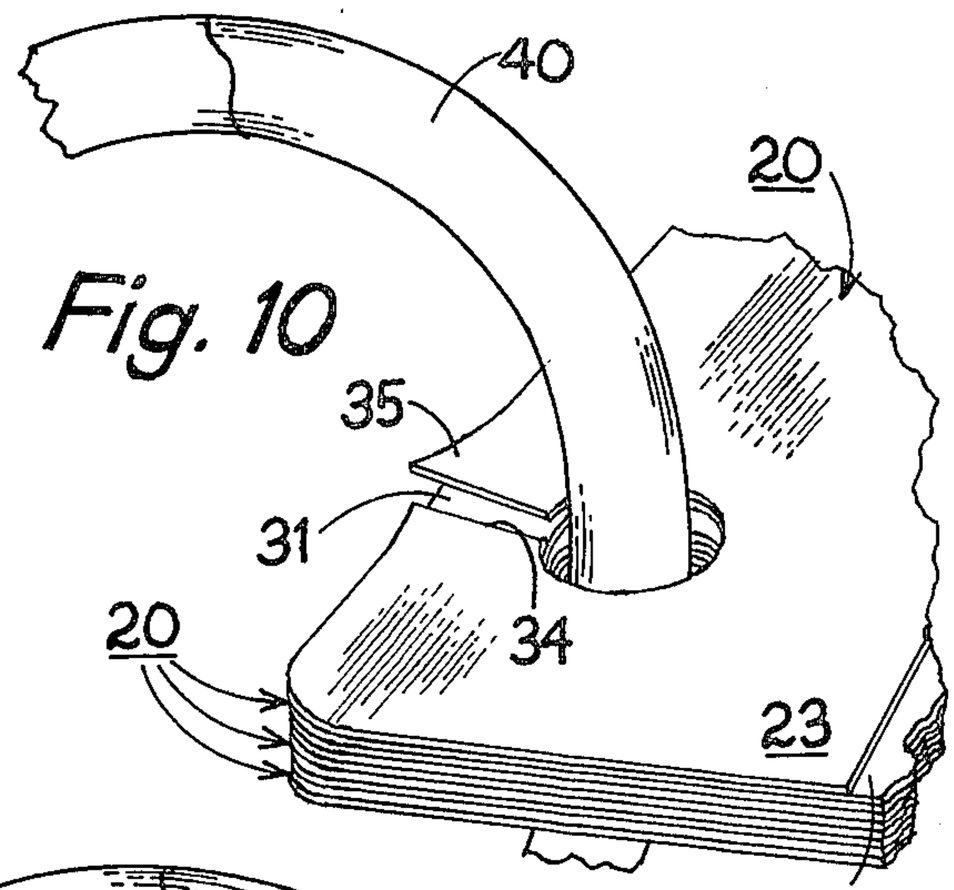
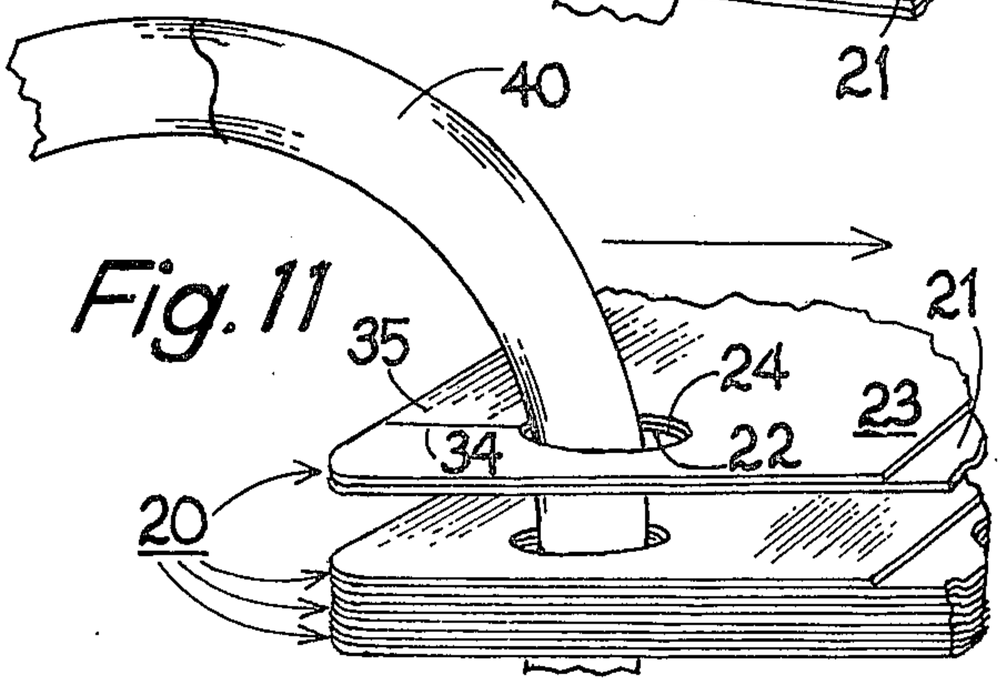


Fig. 11



DUAL-FUNCTION LOOSELEAF BINDER SHEETS

BACKGROUND ART

Due to the flexibility provided by looseleaf binders, such binders and replacement sheets for these binders have become very popular for both school and business use. However, although looseleaf binders and looseleaf binder sheets have existed for many years, one problem that has remained unsolved is the inability of the looseleaf binder sheets to be both securely retained in the binder, while also being easily removed and subsequently reinserted without causing any ripping or tearing of the sheet of paper and without having to open the binder.

Although the desire to remove and replace individual sheets of paper in looseleaf binders without opening the binder and without tearing the edges of the sheet has always existed, the requirement that the looseleaf sheets be securely retained has been the dominant objective to which prior art patents have been directed. As a result, these prior art inventions and products teach reinforcing tabs, inserts, or liners, all of which are constructed to enhance the strength of the looseleaf sheet of paper in the area about the binder-receiving holes, in order to assure secure retention of the sheets by the binding posts or rings. Such systems are taught in U.S. Pat. Nos. 915,789 and 3,315,683. However, these prior art systems do not enable the user to remove any sheet from the binder without either opening the binder or ripping the sheet.

Consequently, the principal object of the present invention is to provide pre-punched sheets for looseleaf binders wherein each sheet is capable of being securely retained in the binder, free from accidental, unwanted dislodgement or removal, while also being freely removable from the binder without opening the binder and without permanently damaging the sheets of paper.

Another object of the present invention is to provide sheets of looseleaf paper having the characteristic features described above which is capable of being removed quickly and easily as well as repeatedly, without causing any degradation of the holding system.

Another object of the present invention is to provide sheets for looseleaf binders having the characteristic features described above which also incorporates edge reinforcements to further enhance the structural integrity and longevity of the dual-function sheets.

Other and more specific objects will in part be obvious and will in part appear hereinafter.

DISCLOSURE OF THE INVENTION

With the present invention, the prior art drawbacks are all overcome and eliminated and a unique construction for looseleaf binder sheets is achieved. The looseleaf binder sheets of this invention incorporate at least two layers of sheet material about each fastening or binder-receiving hole of the paper sheets with each layer incorporating flexible, binder locking fingers between the side edge of the paper and each binder-receiving hole, thereby creating at least two flexible, overlying binder-locking fingers directly adjacent each binder-receiving hole.

Furthermore, these overlying binder-locking fingers are constructed with their respective terminating ends offset from each other, thereby achieving a cooperating, overlapping, juxtaposed construction, which provides interlocking engagement of the sheet of paper in the binder to prevent withdrawal of the sheet from the binder in response to forces acting radially on the binder-receiving holes of the paper sheet or primarily in the plane of the sheet. However, when forces are applied to a paper sheet which forces are not in the plane of the sheet and, instead, are either acting axially to the binder-receiving holes or at an acute angle thereto, the flexible, binder-locking fingers are bent and displaced relative to each other, allowing the sheet of paper to be withdrawn from the binder, quickly and easily without permanently damaging the sheet of paper or requiring the binder to be opened. As a result, a dual-function looseleaf binder sheet is achieved.

In the preferred embodiment, the paper sheet of the present invention incorporates a single elongated reinforcing strip which is securely fastened to the side edge of the sheet of paper, providing a twin layer reinforced area about each of the binder-receiving holes, while only requiring a single additional component. However, if desired, separate overlying reinforcing segments can be affixed about each binder-receiving hole in order to achieve the overlapping, flexible, binder-locking finger construction of the present invention.

In the preferred embodiment, two overlying flexible, binder-locking fingers are employed and have been found to provide the desired secure retaining engagement with the binder in response to forces acting radially about the binder-receiving holes, as well as the desired quick and easy removal of the sheets in response to forces acting along the central axis of the binder-receiving holes or the forces at acute angles thereto. However, if desired, three or more layers could be employed without departing from the scope of this invention.

The invention accordingly comprises an article manufactured possessing the features, properties and relation of elements which will be exemplified in the article hereinafter described, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

FIG. **1** is an exploded top plan view of the dual-function, looseleaf binder sheet of the present invention;

FIGS. **2** and **3** are top plan views, partially broken away, showing alternate embodiments for the dual-function, looseleaf binder sheets of the present invention;

FIGS. **4–7** are enlarged perspective views of a section of the looseleaf binder sheets of the present invention showing, in sequence, the operation of the looseleaf binder sheet of the present invention being inserted into locked engagement with a ring binder without opening the ring binder; and

FIGS. **8–11** are enlarged perspective views of a section of dual-function, looseleaf binder sheets of the present invention showing comparable sequential, paper insertion steps depicted in FIGS. **4–7**, as viewed from the bottom edge of the sheets.

BEST MODE FOR CARRYING OUT THE INVENTION

In FIG. **1**, the preferred embodiment of dual function, looseleaf binder sheet **20** of the present invention is

shown. In this preferred embodiment, looseleaf binder sheet **20** comprises a conventionally-sized paper sheet **21** having a side edge **25** and three binder-receiving holes **22** formed therein inwardly along side edge **25**. In addition, dual function, looseleaf binder sheet **20** incorporates an elongated, continuous, reinforcing strip **23** having a side edge **27** and three binder-receiving holes **24** formed therein inwardly of side edge **27**. Also, paper sheet **21** incorporates a plurality of bonding zones **28** positioned between holes **22** for secure bonded engagement with reinforcing strip **23** when strip **23** is positioned in overlying engagement therewith.

Paper sheet **21** also incorporates slits **30** which, in the embodiment shown in FIG. **1**, extend radially from each binder-receiving hole **22** to side edge **25** of paper sheet **21**. As will be more fully described below, each slit **30** establishes a flexible binder locking finger **31** between each binder-receiving hole **22** and terminating side edge **25**.

In a similar construction, elongated strip **23** incorporates slit **34** radially extending from each binder-receiving hole **24** to terminating side edge **27** of strip **23**. As with slits **30**, slits **34** establish a flexible, binder-locking finger **35** between each binder-receiving hole **24** and edge **27** of elongated strip **23**. In the preferred construction shown in FIG. **1**, each slit **34** joins side edge **27** at an acute angle thereto. Preferably, slits **34** have a direction of slope which is opposite to the direction of slope of slits **30**. In this way, binder-locking fingers **31** and **35** have terminating edges on opposite sides of binder-receiving holes **22** and **24** and are capable of being assembled into cooperating pairs having an interactive, overlapping construction.

In order to complete the construction of the dual function, looseleaf binder sheet **20** of the present invention, strip **23** is securely bonded along the side edge of paper sheet **21** with binder-receiving holes **24** and **22** being concentrically axially aligned. Although strip **23** can be bound to paper sheet **21** in a plurality of alternate constructions, it has been found that the use of fastening means such as glue positioned along the side edge of paper sheet **21** in fastening zones **28** between holes **22** provides the desired secure affixation of strip **23** to paper sheet **21**.

Once strip **23** has been securely affixed to paper sheet **21**, the construction of dual function, looseleaf binder sheet **20** of the present invention is completed. As is fully detailed below, the creation of two cooperating, juxtaposed, overlapping, flexible, binder locking fingers **31** and **35** positioned between each of the aligned binder-receiving holes **22** and **24** on one side thereof, and the aligned terminating edges **25** and **27** on the other side thereof, looseleaf binder sheet **20** is achieved. With this construction, looseleaf binder sheet **20** is securely retained in a binder, preventing withdrawal thereof in response to forces acting in the plane of the sheet, while also being quickly and easily withdrawn from the binder, without ripping of the sheet or opening of the binder, in response to the forces acting substantially perpendicular to the plane of looseleaf binder sheet **20** or at an acute angle from these perpendicular forces.

In FIGS. **2** and **3**, two alternate embodiments of the present invention are shown. In these embodiments, elongated strip **23** and paper sheet **21** incorporate alternate slit configurations.

In FIG. **2**, slits **34** of elongated strip **23** is depicted substantially perpendicular to side edge **27** and extending therefrom to binder-receiving holes **24** at a position almost tangential therewith. Similarly, slits **30** of sheet **21** extends substantially perpendicularly from side edge **25** of sheet **21** to binder-receiving holes **22**, which are concentrically aligned with holes **24** of strip **23**, with each slit **30** joining concentrically aligned binder-receiving holes **22** of sheet **21** at a point substantially tangential to holes **22** and at a position opposite slit **34**. In this way, flexible binder-locking fingers **31** are created on sheet **21** which are in juxtaposed underlying cooperating relationship with flexible binder locking fingers **35** of strip **23**.

In FIG. **3**, a similar dual-function, looseleaf binder sheet configuration is shown wherein slits **34** of elongated strip **23** extends substantially perpendicularly from edge **27** to binder-receiving holes **24**, as described above in FIG. **2**, while slits **30** of sheet **21** extends at a sloping angle between concentrically aligned binder-receiving holes **22** to terminating edge **25** in a substantially identical manner as described above in reference to FIG. **1**. In this configuration, although the angles of slits **30** and **34**, in relationship to the side edges, are not substantially identical, an operatively identical construction is achieved with overlying, flexible, binder-locking fingers **35** and **31** being created in order to achieve the dual function locking and removal construction of this invention.

By referring to FIGS. **1**, **2** and **3**, it is readily apparent that many alternate constructions and arrangements for the present invention can be employed without departing from the scope of this invention. In particular, any multi-layer configuration which achieves a plurality of juxtaposed, overlying, cooperating, flexible, binder-locking fingers positioned between the binder-receiving holes and the side edge of the looseleaf sheet would provide an operative looseleaf binder sheet incorporating this invention.

In FIGS. **4–7**, sequential views of the operation of the flexible binder-locking fingers are shown as the dual-function, looseleaf binder sheet **20** of the present invention is inserted onto a ring binder for secure retained engagement therewith. FIGS. **8–11** represent similar sequential insertion steps, with looseleaf binder sheet **20** viewed from an alternate position. In order to clearly depict the insertion and engagement process of the cooperating, overlapping, flexible, binder-locking fingers with a binder, FIGS. **4–11** depict the engagement operation of a section of looseleaf binder sheet **20** about a single ring binder **40**. However, as is readily apparent from this description, the entire dual-function looseleaf binder sheet **20** of the present invention would be securely mounted to any fastener in an identical fashion regardless of the number of binder-receiving holes incorporated on the looseleaf sheet.

In FIGS. **4** and **8**, dual-function, looseleaf binder sheet **20** of the present invention is shown in its initial stages of mounting engagement with ring binder **40**. As shown therein, as forces are applied to sheet **20** which are acting substantially coaxially with the central axis of concentrically aligned binder-receiving holes **22** and **24**, or at acute angles thereto, overlapping flexible binder-locking fingers **35** and **31** begin to spread away from their respective finger forming slits **34** and **30**. As additional force is applied, flexible binder locking fingers **31** and **35** continue to spreadingly disengage from their overlapping relationship until separated, as shown in FIGS. **5** and **9**.

Then, as shown in FIG. **6**, the application of additional paper insertion force causes flexible binder-lock-

ing fingers **31** and **35** to slide over the surface of ring binder **40** moving from engagement with its outside diameter to engagement with its inside diameter, causing coaxially aligned binder-receiving holes **22** and **24** to peripherally surround binder ring **40**. In FIG. **10**, dual function, looseleaf binder sheet **20** is shown in the last stage prior to final completed engagement with ring binder **40**, wherein flexible binder-locking finger **35** is depicted approaching complete overlapping juxtaposed cooperating engagement with underlying flexible binder locking finger **31**, with binder locking finger **35** also approaching abutment with slit **34**.

In FIGS. **7** and **11**, the dual function looseleaf binder sheet **20** of the present invention is shown in its fully engaged position with ring fastener **40**, with FIG. **11** clearly depicting the secure retained engagement of sheet **20** with ring binder **40** when forces acting upon sheet **20** are imposed substantially coplanar with sheet **20**. When any such coplanar forces are imposed upon sheet **20**, the side edges of binder locking fingers **35** and **31** directly abut the surface of binder **40**, exerting a lateral force on binder-locking fingers **31** and **35**. Since the flexibility inherent in binder-locking fingers **31** and **35** is in response to forces acting substantially perpendicular to fingers **31** and **35**, fingers **31** and **35** remain stationary against these lateral forces, thereby securely retaining sheets **20** in locked engagement with ring binder **40**. In this way, the dual function of both locked engagement and quick and easy withdrawal of a looseleaf binder sheet **20** is achieved.

It will thus be seen that the objects set forth above among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above article without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A looseleaf binder sheet for mounting in looseleaf binders incorporating binder means, with each looseleaf binder sheet capable of being securely maintained in locked engagement with the binder means as well as easily removed therefrom when desired without tearing or ripping the sheet and without opening of the binder means, each looseleaf binder sheet comprising:

A. a binder-engaging section incorporating

(1) at least two layers formed therealong each layer having a coinciding free, exposed edge, and

(2) a plurality of binder-receiving holes

(a) positioned along the binder engaging section inwardly spaced from the free, exposed edge thereof in substantial alignment, and

(b) formed through the plurality of layers;

B. a set of cooperating, juxtaposed, overlapping oppositely extending binder-locking fingers each having its terminating end defined by a slit in the binder-engaging section extending between the free, exposed edge thereof and each binder-receiving hole; and

C. each of said sets of binder-locking fingers comprising a single binder-locking finger in each of the layers, and the finger-end-defining slit in each of said layers being non-coincidingly offset from the finger-end-defining slit in the adjacent layer

whereby the plurality of sets of binder-locking fingers securely maintain the looseleaf binder sheet engaged with the binder means in response to forces acting in the plane of the looseleaf binder sheet, while allowing the looseleaf binder sheet to be quickly and easily removed from engagement with the binder means in response to forces acting substantially perpendicular to the plane of the looseleaf binder sheet, or at an acute angle thereto, by the flexible, spreading disengagement of the binder-locking fingers in response to said force.

2. The looseleaf binder sheet defined in claim **1**, wherein each of said layers are further defined as being securely affixed to each other along areas adjacent the binder-engaging holes.

3. The looseleaf binder sheet defined in claim **1**, wherein at least one of said layers comprises a single, elongated reinforcing strip fastened to the adjacent layer by glue means in zones formed between the binder-receiving holes.

4. The looseleaf binder sheet defined in claim **1**, wherein at least one of said layers comprises paper material and at least another of said layers comprises plastic sheet material, thereby imparting added stiffness and rigidity to the binder-locking fingers formed therefrom.

5. The looseleaf binder sheet defined in claim **1**, wherein the finger-forming slits in each layer are offset from the slits of each adjacent layer, thereby providing overlapping, cooperating, juxtaposed binder-locking fingers having terminating ends formed on opposite sides of the binder-engaging hole.

6. The looseleaf binder sheet defined in claim **1**, wherein

(1) the finger-forming slit of the first of said layers is defined as extending radially from each binder-engaging hole to the edge of the binder-engaging section, joining therewith at an acute angle, and

(2) the finger-forming slits of the second layer extend from each binder-engaging hole to the edge of the binder-engaging section, joining therewith at an acute angle, and also having a slope opposite to the slope of the slits in the first layer, thereby establishing overlapping, cooperating, juxtaposed, binder-locking fingers having terminating ends on opposite sides of the binder-engaging hole.

7. The looseleaf binder sheet defined in claim **1**, wherein the finger-forming slits of each layer extend substantially perpendicularly from the edge of the binder-engaging section to each binder-engaging hole, with the finger-forming slits of the first layer extending towards one tangential edge of the binder-receiving hole and the finger-forming slits of the second layer extending to the diametrically opposed tangential edge of the binder-engaging hole.

8. The looseleaf binder sheet defined in claim **1**, wherein the finger-forming slits of one layer extend substantially perpendicularly from the edge of the binder-engaging section to the binder-engaging hole and the finger-forming slits of the second layer extend radially from the opposite side of the binder-engaging hole to the edge of the binder-engaging section joining therewith at an acute angle, thereby providing overlapping, cooperating, juxtaposed binder-locking fingers having terminating ends at opposite sides of the binder-engaging hole.

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